REMARKS / ARGUMENTS

Claim Rejections - 35 USC §103

In the Office Action dated August 11, 2004, the Examiner rejected claims 213 – 275 under 35 USC 103, as being unpatentable over Fujimoto et al (US 6,238,291) in view of Miyamoto et al (US 6,139,433) and in further view of Sawano et al (US 6,544,126) which are referred to as '291, '433, and '126 respectively.

Fujimoto '291 teaches a Nintendo 64 (game system 100 in Fig. 1) containing a first processor (11 in Fig. 5), a first graphical processor (16), a TV display (600), and transfers data to a Gameboy (400) containing a second processor (431 in Fig. 6), an LCD processor (433), and a discrete LCD display (401). Fujimoto '291 is silent regarding 3D game worlds, points of view, camera angles, and characters having plural body parts.

The related application of Miyamoto '433 teaches the ability of the Nintendo 64 (Fig. 1 in '433) to generate 3-D graphics that include multiple points of view and camera angles, and characters composed of plural body parts which are displayed on a display device (Figures 4, 23, 26, 33 & Abstract). According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the 3-D capabilities of the Nintendo 64 game system as demonstrated in Miyamoto '433, into the system of Fujimoto '291, in order to offer the user greater visual detail and to maintain users interest in the gaming device.

Although incorporating the 3-D capabilities of the Nintendo 64 game system (as shown in Miyamoto '433) into the Nintendo 64 system of Fujimoto '291 is implicit in the design, there is no suggestion in either '433 or '291 that the 3-D capabilities of the Nintendo 64 system 100 could be incorporated into the Gameboy (portable game machine 400 in Fujimoto). Linking Nintendo 64 system 100 to Gameboy 400 as shown in Fujimoto, cannot confer 3-D capabilities to Gameboy 400 because communication cable 200 only transfers data between 3-D system 100 and portable system 400 and does not transfer 3-D capability. Neither Miyamoto '433 nor Fujimoto '291 show, describe, or remotely suggest 3-D capability in a portable game system such as a Gameboy.

3-D capability in Miyamoto '433 is provided by 3-D graphics coprocessor 200 which is described in greater detail in US patent 6,239,810 (Van Hook et al). Van Hook '810 does not show, describe, or remotely suggest that 3-D graphics coprocessor 200 could be used in a portable game system such as a Gameboy. In Van Hook '810 there is no mention of "Gameboy" or "portable game" or "LCD" or "battery" that would suggest portability, an essential element of applicant's claim 213. To the contrary, Van Hook teaches away from portability in column 5 lines 24–28:

> "The user also needs to connect main unit 52 to a power source. This power source may comprise a conventional AC adapter (not shown) that plugs into a standard home electrical wall socket and converts the house current into a lower DC voltage signal suitable for powering main unit 52."

The Gameboy 400 shown in Fujimoto '291 is a portable game system that contains an "LCD processor 433" that is described in column 7 lines 45–50 and 61–67. This LCD processor 433 is not a 3-D graphics processor as suggested in the last Office Action, but rather processes sprites as described in US patent 6,315,669 (Okada et al) in column 1, lines 37–39 and 48–51 as follows:

> "The graphics of the GAMEBOY are created from blocks of pixels known as characters... Objects are groups of character data that are used to represent the main game character and other moving objects that overlay the background in a game. Objects are sometimes referred to as "sprites".

3-D graphics is a technology that originated in the 1970's and encompasses several subclasses under USPTO class 345. Sprite processing (USPTO class/subclass 345/683) is technology that is distinct from the 3-D graphics process described in Fujimoto '291, Miyamoto '433, and Van Hook '810. There is no mention of "sprite" or "sprites" in either Miyamoto '433 or Van Hook '810 which generate 3-D graphics, not 2-D sprites.

The Gameboy described in Fujimoto '291 was designed to generate pictures using sprites for display on small portable LCD screens and was not designed to produce 3-D graphics in the sense used in Miyamoto '433 and Van Hook '810 in connection with the Nintendo 64. Generating 3-D graphics in a Gameboy was therefore far from obvious prior to applicant's invention.

The words "3D", "3-D", "dimension", "perspective", "point of view", "POV", "viewpoint", "camera angle" and other indicia of three-dimensionality are not used in Fujimoto

'291 or Okada '669. Wherever these terms are used in Miyamoto '433 or Van Hook '810, they are used only in connection with display on a TV screen, not on a portable game system LCD device. Examples of 3-D graphics on portable LCD devices are not shown, described, or remotely suggested in Fujimoto '291, Miyamoto '433, Okada '669, or Van Hook '810.

Even if, for the sake of argument, graphics co-processor (200) used in the Nintendo 64 (and described in Miyamoto '433 and Van Hook '810) were designed into a Gameboy for generating 3-D game worlds and characters from variable viewpoints and angles, a design not remotely suggested by any of the cited references, this design would be very impractical, because the Nintendo 64 co-processor consumes enough energy to require AC electric power, as mentioned above with reference to Van Hook '810 in column 5 lines 24–28. The prior art therefore teaches away from the suggested combination by placing characters generated from variable 3-D viewpoints and variable 3-D camera angles solely in non-portable game systems.

"Portable game system" is a term of art (and an essential element in applicant's claim 213) that includes being powered by a battery for portability. In a portable game system, large energy consumption by a graphics co-processor would inevitably result in very short battery life which would make the portable game product unmarketable. The Nintendo 64 system described in Miyamoto '433 and Van Hook '810 is not a portable game system and therefore does not have the low power consumption circuitry required for a battery powered portable game system that operates independently of 110/220 vac electric power.

It would be impractical to transplant a high energy consuming graphics co-processor from a video game system that is powered from an electric wall socket, and design the high energy consuming co-processor into a portable game system powered by batteries that require low power consumption. Combining the 3-D graphics processor of Miyamoto '433 or Van Hook '810 with the portable game machine 400 described in Fujimoto '291 would therefore be impractical and unmarketable.

The practical solution disclosed in applicant's present application was not shown, described, or remotely suggested in Fujimoto '291, Miyamoto '433, or Van Hook '810. Combining those references would not result in the invention defined by claim 213.

Applicant therefore submits that claim 213 and claims dependent thereon are not obvious in view of the combined teachings of Fujimoto '291 and Miyamoto '433 and hence are allowable over those references.

In the Office Action dated August 11, 2004, the Examiner rejected claims 213–275 under 35 USC 103, as being unpatentable over the combined teachings of Fujimoto '291 and Miyamoto '433 in view of Sawano et al (US 6,544,126).

Sawano '126 teaches a video game machine (14) such as a Gamecube that is digitally linked to a portable game machine (12) such as a Gameboy or Gameboy Advance (12A–12B). 3D graphics and a 3D graphics engine are described for the Gamecube in columns 6 and 8. Sawano '126 is silent regarding points of view and camera angles.

According to the Examiner, it would have been obvious to utilize the 3-D capabilities of the Gameboy in the light of the combined teachings of Fujimoto '291, Miyamoto '433 and Sawano '126, so that character actions will not be revealed to other players.

As indicated by the Examiner, Sawano '128 in column 6, lines 32–49 suggests that

"some 3D-capabilities are also possible depending on the software being used."

Sawano '128 in this one line 48 suggests 3-D graphics as a desirable goal, but methods or apparatus for achieving that goal are not shown, described, or suggested in Sawano '126. Moreover, the words "viewpoint", "angle", "point of view", "POV", "perspective", "viewed", and "dimension" are not used in either Sawano '128 or in Fujimoto '291. Wherever 3-D is mentioned, other than in column 6, line 48, the 3-D graphics are for display on a TV screen (50), not on LCD screen (24). Hence combining the teachings of Sawano '128 and Fujimoto '291 would not provide any guidance in designing a portable game system that generates characters from variable 3-D points of view and variable 3-D camera angles in response to data received from a video game system, as required by applicant's claim 213.

In Sawano '126, the expression "3D" is mentioned in four phrases:

column 5, line 52 "GAMECUBE 3D video game system"

column 6, line 57–58 "the games played by portable unit 22 [GameBoy] are 2D games but some 3D-capabilities are also possible"

column 6, line 62–65 "video game machine 14 [GameCube] ... may be a 3D video game play system with advanced 3D graphics"

column 8, line 5–6 "video game machine 14 [GameCube] has a CPU 78 including a 3D graphics engine"

3-D graphics engines for GameBoys are not mentioned in Sawano '126, which would be a strange omission if it were obvious to substitute a 3-D graphics co-processor for the Gameboy co-processor designed for sprites, bitmaps, and tiles. Moreover, none of the drawings in Sawano '126 illustrate 3-D graphics on LCD screen 24. Stick figures are illustrated in Figures 13A–13D, but these are not player-controlled characters, are not 3-dimensional, and are not displayed from variable 3-D points of view and camera angles, as required by applicant's claim 213.

In Sawano '126, portable game machine 12 (Fig. 2) is identified in column 5, lines 48–50 as a "GAME BOY or GAME BOY ADVANCE" and linked Gameboy Advance units 12A–2B are illustrated in Fig. 10. The internal structure of CPU 66 (Fig. 2) for a Gameboy Advance is not specified in Sawano '126, but is described in detail in US 2004/0053691 (Kawase). In Kawase '691, a Gameboy Advance is illustrated in Fig. 1 and is identified as such in paragraph [0049] in '691. The image co-processor in the Gameboy Advance (1) in Kawase '691 is a sprite processor and is not shown or described as generating 3-D images from variable 3-D viewpoints and variable 3-D camera angles in Sawano '126, or in Kawase '691, or in any of the cited references.

According to block diagram Fig. 2 in Kawase '691, the Gameboy Advance sprite co-processor consists of Background (BG) process unit 210, object (OBJ) process unit 212, and image synthesis process unit 213 which drives LCD 11. Paragraph [0056] in '691 refers to "the hand-held game machine 1 [which] performs a so-called sprite process by using the BG process unit 210 and the OBJ process unit 212 to generate a game image." Figures 6, 8, and 18 clearly depict sprites. The characters illustrated in Figures 5A, 5B, 11A, and 11B appear flat because they are generated by "a so-called sprite process" in the Gameboy Advance.

The words "viewpoint" or "point of view" do not appear in Kawase '691 or in several other Nintendo US patent applications that describe the Gameboy Advance, such as 2004/0110563, 2004/0106456, and 2004/0087369.

Moreover, the words "viewpoint" or "point of view" are not mentioned even once in two Internet web sites that provide very detailed technical descriptions of the Gameboy Advance. These web sites describe Gameboy Advance hardware interupts, BIOS calls, graphics modes 0 through 5, bit-by-bit descriptions of the Program Status Register and color palette RAM, and a section on Sprites: "The GBA supports 128 simultaneous sprites. These can be up to 64x64 pixels in size. The OAM, which starts at 0x07000000, has one entry for each of the 128 sprites." It then describes sprite attributes bit-by-bit for more than 3 pages, but not a word about variable viewpoints or viewing angles anywhere in the two documents.
These Gameboy Advance documents may be found at:

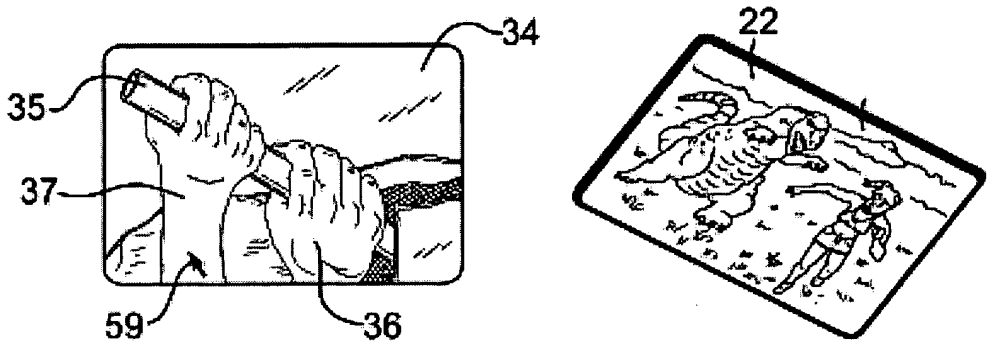
www.jharbour.com/gameboy/GBA_02.pdf and

www.cs.rit.edu/%7Etjh8300/CowBite/CowBiteSpec.htm

Sprites are clusters of pixels in 2-dimensional arrays and do not suggest 3-D points of view and 3-D camera angles which are essential elements of applicant's claim 213. It was not obvious on applicant's priority date to generate 3-D graphics from 3-D viewpoints and 3-D angles in a 2-D sprite-based portable game system.

Unlike the sprite objects illustrated in Figures 9(A) and 9(B) in Fujimoto '291 which are rectangular tiles for display on the portable LCD (401), applicant's "characters"

resemble people or animals or monsters or their body parts such as hand 37 displayed on portable LCD screen 34 or 22, as illustrated in applicant's Figures 2–4:



These animated characters may be generated from texture-mapped polygons according to applicant's paragraph [0067]: "Fig. 11 shows hand 37 shaped as a fist... The polygons which form the image of hand 37 on LCD 22" and in paragraph [0075] "rendering texture-mapped polygons... and related graphics processing". Polygons are not mentioned in Sawano '126 or in Kawase '691 which specifies in paragraph [0056]: "the hand-held game machine 1 performs a so-called sprite process".

Applicant's claim 213 is limited to characters in 3-D game worlds that are generated from 3-D points of view and 3-D camera angles for display on a portable LCD. This 3-D improvement to the Gameboy was not obvious on applicant's priority date.

The words "viewpoint" or "angle" are not used in Sawano '126 and generating characters from variable 3-D points of view and 3-D camera angles is not shown, described or remotely suggested in Sawano '126. The combination of Sawano '126, Fujimoto '291, and Miyamoto '433 suggested by the Examiner would therefore fail to teach the suggested "3-D capabilities of the Nintendo Gameboy" regarding variable 3-D points of view and 3-D camera angles because of lack of enabling disclosure in Sawano '126.

As stated in Ex parte Levengood, 28 U.S.P.Q.2d 1300 (P.T.O.B.A.&I. 1993), the Patent and Trademark Office "can satisfy the burden of establishing a *prima facie* case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that would lead that individual to combine the relevant teachings of the references."

There are no relevant teachings regarding Gameboy 3-D graphics in Sawano '126, either alone or in combination with the other references. Instead, Sawano '126 merely expresses a hope that "some 3D-capabilities are also possible" A hope for a cure for cancer in a document lacking disclosure of any method of cure does not make obvious a later invention that discribes such a method. Likewise, the hope that 3D-capabilities are possible in a Gameboy in a linked system without any disclosure of a practical method of providing those capabilities, does not rise to the "relevant teachings" required in Levengood.

What would those relevant teachings be? Should the GameCube or Nintendo 64 video graphics coprocessor be duplicated in a battery powered Gameboy to provide 3-D capability in the Gameboy? Should a GameCube coprocessor provide 3-D capability for both GameCube and Gameboy by rendering Gameboy polygons in the GameCube from variable angles and points of view "depending on the software" and transmitting the resulting pixels to the Gameboy sprite processor? Sawano '126 is silent on such questions. The combined teachings of Fujimoto '291, Miyamoto '433, and Sawano '126 provide no more than Sawano's hope for 3-D in the Gameboy and do not provide "relevant teachings" for a 3-D Gameboy method.

Therefore, applicant submits that generation of player characters in a Gameboy from variable 3-D points of view and variable 3-D camera angles was not obvious in the suggested combination of Sawano '126, Fujimoto '291, and Miyamoto '433 in which sprites, not 3-D graphics data, are used for player characters in the Gameboy.

If generating characters from variable 3-D viewpoints and variable 3-D camera angles for display on a portable LCD game system were obvious to '291, '433, or '126 co-inventors, why did they not provide even one example in the drawings? This would be a strange omission if it were obvious to use 3-D graphics on a portable LCD screen in the manner described by Miyamoto '433 for display on a TV screen.

In Miyamoto '433 and several other patents, Miyamoto illustrated characters with plural body parts such as Mario (Fig. 27E) generated by the Nintendo 64 from variable 3-D viewpoints and variable 3-D camera angles for display on a TV screen. But in US patent application 2002/0165028 that has a priority date of May 2, 2001, only 8 days before applicant's priority date, when Miyamoto, the game expert who invented Mario, chose examples of "characters" for display on an LCD device on a Gameboy Advance, he chose simple geometric objects instead of his Mario as illustrative characters. These characters are illustrated in Fig. 9(c) in Miyamoto '028:

(C) CHARACTER DATA FOR PORTABLE GAME MACHINE

Unlike Mario, geometric objects have only one body part and have no face, arms, legs, and other body parts that are viewed from various angles. In Miyamoto '028,

geometric objects are generated as sprites. If it were obvious to generate people and other full bodied player characters from variable 3-D viewpoints and variable 3-D camera angles for display on portable game systems, why did Miyamoto choose geometric sprite objects that have only one body part instead of his Mario character? Clearly, it was not obvious to Miyamoto or his co-inventors to generate player characters with plural body parts viewed from variable 3-D viewpoints and variable 3-D camera angles for display on portable game systems designed for 2-D sprites when linked to a console game system that does generate plural body part characters from variable 3-D viewpoints and variable 3-D camera angles for display on TV screens.

Therefore, applicant submits that claim 231defines an invention that was not obvious to game experts at the time of applicant's priority date.

In the last Office Action, the Examiner objected to pending independent claims and some claims dependent thereon, because of limitations that were also taught by Fujimoto '291, Miyamoto '433, and/or Sawano '126. Applicant submits that use of these limitations is moot because pending independent claims are allowable for reasons that were argued above and do not rely on the limitations.

The cited references illustrate how game experts overlooked the present invention because they regarded a data linked portable game system as an LCD-equipped controller of the linked console game system. In US patent 6,132,315, column 11, lines 60–62, Miyamoto said: "the game play ... may be implemented by using the first-machine" [GameBoy] "in place of the controller". As long as they regarded a

linked Gameboy as a smart controller, they overlooked the possibility of displaying animated characters on portable LCD screens from variable 3-D viewpoints and variable 3-D camera angles.

A more recent example of this mindset may be found in Aonuma (2003/0216177) which shows 3-D characters in Figures 5 and 6 for display on a TV screen, but belittles the LCD screen as "a 2-D map screen." Aonuma refers to the LCD screen as "the 2-D map screen" 38 times, as if portable LCD screens were necessarily limited to 2-D graphics such as maps. Aonuma mentions variable viewpoints and "virtual camera" in paragraphs [0004], [0064], [0069], [0070], and [0081] but only in connection with display on a TV screen. Aonuma does not show, discuss, or remotely suggest 3-D viewpoints, 3-D camera angles, or 3-D characters on LCD 41. Aonuma's priority application was filed on May 17, 2002, more than one year after applicant's priority date. Applicant's invention was still not obvious one year after applicant filed his priority application.

Because portable game systems were stereotyped as LCD-equipped controllers and map screens in linked systems, the possibility of portable game systems providing auxiliary displays of full bodied characters from variable 3-D viewpoints and variable 3-D angles was overlooked. The long-standing assumption in the prior art that portable game systems would not generate characters from variable 3-D viewpoints and angles when linked to video game systems that do generate characters from variable 3-D viewpoints and angles, is evidence that applicant's invention was not obvious.

None of the cited references show, describe, or suggest that an LCD in a portable game system should display player characters with plural body parts from variable 3-D viewpoints and angles. In stark contrast, applicant's specification provides numerous illustrations of 3-D characters and other objects generated from variable 3-D viewpoints and 3-D angles on the LCD. For example, Figures 1, 2, 7, 11, 15, 22, 27, 28, 39, 42, and 43.

Generating characters with plural body parts from variable 3-D viewpoints and 3-D angles in linked portable game systems was not suggested in the cited prior art because applicant's invention was not obvious to video game experts.

Applicant's invention is classified in a crowded art and therefore the novel, non-obvious improvements defined by the present pending claims should be regarded as significant.

Arguments directed above to claim 213 may also be directed to independent claims 258, 265, 272, 279, 291, and claims dependent thereon.

Applicant's invention alone achives the realism and 3-D views of animated characters with plural body parts generated from variable 3-D viewpoints and 3-D camera angles in linked portable game systems. For the above reasons, applicant submits that the present pending claims define an invention that is novel, non-obvious, and a significant advance over the prior art.

Summary

1. None of the cited references suggest features uniquely claimed by applicant, namely, generating characters in a 3-D world from variable 3-D viewpoints and 3-D camera angles for display on an LCD in a portable game system.

2. Combining the teachings of the cited references would not result in the game system defined by applicant's claims.

3. Applicant's invention uses portable game systems in a new way that was not described in the prior-art.

4. Applicant's invention was not obvious to game experts at the time applicant's priority application was filed.

5. 3-D video games are a crowded art and therefore applicant's unanticipated step forward is significant.

Applicant submits that the present pending claims are allowable and a favorable decision is respectfully requested.

Respectfully submitted,

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